

# Understanding the determinants of happiness through Gallup World Poll

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## ABSTRACT

**Background:** The idea of happiness is as old as civilization, but breakthrough is achieved only in 20<sup>th</sup> century. Happiness can be broadly segmented into biological and behavioural component. The sufferings from illnesses hamper happiness. Happiness correlates negatively with morbidity, mortality, stress and anxiety in contrast to a positive correlation with motivation, healthy behaviours and longevity. In this article, an attempt has been made to understand the relationship between happiness and its important contributory factors. **Material and Methods:** The current study used data from the Gallup World Poll available under license CC0. Data analysis was performed using R studio version 1.0.136. Initially, descriptive analysis in the form of mean (standard deviation), violin plot, correlation matrix, and scatter plots were reported. Subsequently, robust regression estimates along with bootstrap standard errors and confidence intervals were used to report inferential statistics. **Results:** Norway, with a happiness score of 7.537 ranked first followed by Denmark with a score of 7.522. Burundi with a score of 2.905 is at the bottom of ranking for happiness. Freedom (CI; 0.95-2.22) and Family (CI; 0.92 - 1.57) are the strongest predictors of happiness. The trust variable does not have a significant (CI; -0.27 - 1.94) relationship with happiness. **Conclusions:** The values and norms in society are changing at a fast pace. Therefore, the measures of happiness require consistent and innovative approaches to measure it.

**Keyword:** Happiness, robust regression, well-being

## Introduction

The concept of happiness has been central to the core of ancient Hindu and Greek cultures. In the Indian context, it is non-attachment, equipoise, selfless duty orientation and effort in the absence of concern.<sup>[1]</sup> Seligman's PERMA model consists of five elements of happiness. Figure 1 displays the Seligman positive emotions (P), engagement (E), relationships (R), meaning (M) and accomplishment (A) model of well-being.<sup>[2]</sup>

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Received: 24-01-2020

Revised: 13-03-2020

Accepted: 07-04-2020

Published: 30-09-2020

Multiple approaches by various researchers lead to numerous measures of happiness such as the PANAS scale,<sup>[3]</sup> subjective happiness scale<sup>[4]</sup> and Oxford happiness inventory.<sup>[5]</sup>

The first World Happiness Report (WHR) integrated various measures of happiness and published it in 2012.<sup>[6]</sup> The WHR covers more than 150 countries and is increasingly gaining recognition from governments and organisations to frame policies using happiness indicators.<sup>[7,8]</sup> However, Bhutan has pioneered the concept of Gross National Happiness (GNH) in 1972 and enacted the same in its constitution in 2008. Madhya Pradesh in India has become the first state in India to establish the happiness department in July 2016. Dubai 2021 plan proposed to make it a 'City of Happy, Creative and Empowered

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**How to cite this article:** Jaswal V, Kishore K, Muniraju M, Jaswal N, Kapoor R. Understanding the determinants of happiness through Gallup World Poll. *J Family Med Prim Care* 2020;9:4826-32.

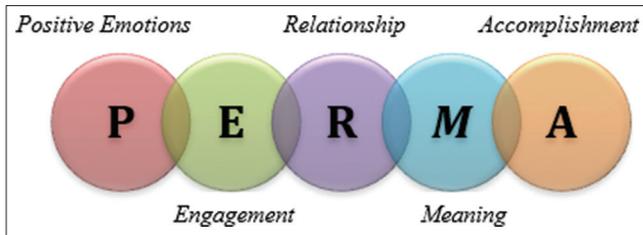
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**Figure 1:** PERMA model of psychological well-being

*People*' (Government of Dubai). Many European nations are investigating and collecting subjective well-being data regularly to provide good governance and happiness to people (OECD 2013).

The sufferings from illnesses also hamper happiness. Happiness correlates negatively with morbidity, mortality, stress and anxiety in contrast to a positive correlation with motivation, healthy behaviours and longevity.<sup>[9]</sup> Therefore, understanding the determinants of happiness is a crucial research area for primary care, health and policymaking. Many investigators highlighted the importance and interaction between health and happiness.<sup>[10,11]</sup> Further, See and colleagues emphasised the importance of happiness index for the efficient performance of the health system.<sup>[12]</sup>

The preceding discussion indicates that the concept of happiness resonated initially with philosophical thoughts. However, it is eventually moving towards measurable outcomes. In this context, we utilised the Gallup World Poll data to understand the role of the various determinants of happiness.

## Design and Sample Selection

Approximately 1000 participants from more than 150 countries were surveyed for happiness levels every year. All the participants from different countries were asked the same core questions in their primary language. The practice of conducting the 'telephonic interviews' and 'face-to-face' surveys in 30 and 60 min, respectively was followed. Telephonic surveys were conducted only in countries where coverage is more than 80%.<sup>[13]</sup> The samples for the study were probability-based and were nationally representative of the adult population.<sup>[14]</sup> All non-institutionalized civilians (of each country) >15 years old were eligible to be included in the study. Around 100–125 clusters (sampling unit) were selected either uniquely or with a combination of simple random sampling, probability proportional to sampling, multiple-cluster stage design for face-to-face interviews. The selection of clusters with appropriate sampling techniques depends on the detail of population information from each country. Gallup follows random digit dialling or a nationally representative list of phone numbers for conducting telephonic interviews. The Gallup methodology and codebook are available for more details.<sup>[14]</sup>

## Dataset

The current study used data from the Gallup World Poll. Gallop provides the dataset for secondary analysis through Kaggle.<sup>[15]</sup>

This data was used to generate the World Happiness Report for the state of global happiness. The first and latest happiness reports (7<sup>th</sup>) were published in 2012 and 2019, respectively. The respondents rated their current lives on a Cantril 11-point ladder consisting of a score depicting worst (score 0) to best (score 10) possible imagined life.<sup>[16]</sup> The scores were obtained from nationally representative samples and used the weights to make the estimates representative of the population.<sup>[14]</sup> Six key variables contributing to happiness scores were Gross Domestic Product (GDP) per capita, healthy life expectancy, social freedom, family, trust and generosity.

Each country in the survey is compared against dystopia. It is an imaginary country with the lowest happiness indicators in terms of each of the six key variables. In other words, no country can perform poorly than dystopia. The world happiness report 2017 surveyed 155 countries and ranked them by their happiness level.

## Data analysis

The dataset for the current study consists of happiness scores from 149 countries for 2016 and 2017. The statistical analysis evaluated six covariates from world happiness data. Data analysis was performed using R studio version 1.0.136. The descriptive measures for variables were reported using mean and standard deviation (SD). Violin plot, correlation matrix and scatter plot charts were prepared to understand the fundamental characteristics of data.

Multiple linear regression using ordinary least square (OLS) was performed to identify the relationship between the dependent variable (happiness) and its covariates. There were doubts about the validity of results from the standard regression technique due to deviations from assumptions. Therefore, robust regression using M-estimator with Huber weight function is used to obtain the parameter estimation and testing. However, a significant drawback of a robust regression estimation technique is the requirement of a large sample size.<sup>[17]</sup> Finally, the bootstrapping technique proposed by Efron and Tibshirani was used to obtain the standard errors and confidence intervals for the interpretation of model parameters.<sup>[18-20]</sup>

## Results

Norway, with a happiness score of 7.537 ranked first followed by Denmark with a score of 7.522. Burundi with a score of 2.905 is at the lowest level for happiness. All the countries were segregated into ten regions to understand and account for inter and intra-regional variation in happiness scores. Table 1 displays the region-wise mean score distribution of happiness and its covariates.

The ten regions are Australia and New Zealand (ANZ), North America (NA), Eastern Asia (EA), Southern Asia (SA), South-eastern Asia (SEA), Middle Eastern and Northern Africa (MENA), Latin America and the Caribbean (LAC), Western Europe (WE), Central and Eastern Europe (CEE)

and Sub-Saharan Africa (SSA). The average score for all the countries is scattered around a score of 5.40 but is having high variability (SD = 1.11) as compared to regional level variations. Most of the countries scoring below average belong to the African region. There is a wide disparity in happiness scores among various countries of a region except for ANZ and NA. One possible reason may be that both regions comprise only two countries, each besides being rich in natural resources. The region-wise score with a value of 7.30 is highest for Australia and New Zealand, followed by a score of 7.16 in the North American region.

Figure 2 displays the violin plots for the year 2016 and 2017 to visualise region-wise variability in happiness scores. The plots are shown adjacent to each other to see the year-wise comparison of scores. The distribution of scores is almost similar in both the years. The happiness score for ANZ is virtually overlapping. Sub-Saharan Africa is having the lowest happiness score of 4.15. Although the economy of Central and Eastern Europe's

economy is more than twice that of SSA, yet generosity and trust are more in SSA. Burundi is the only country with a happiness score of less than 3.

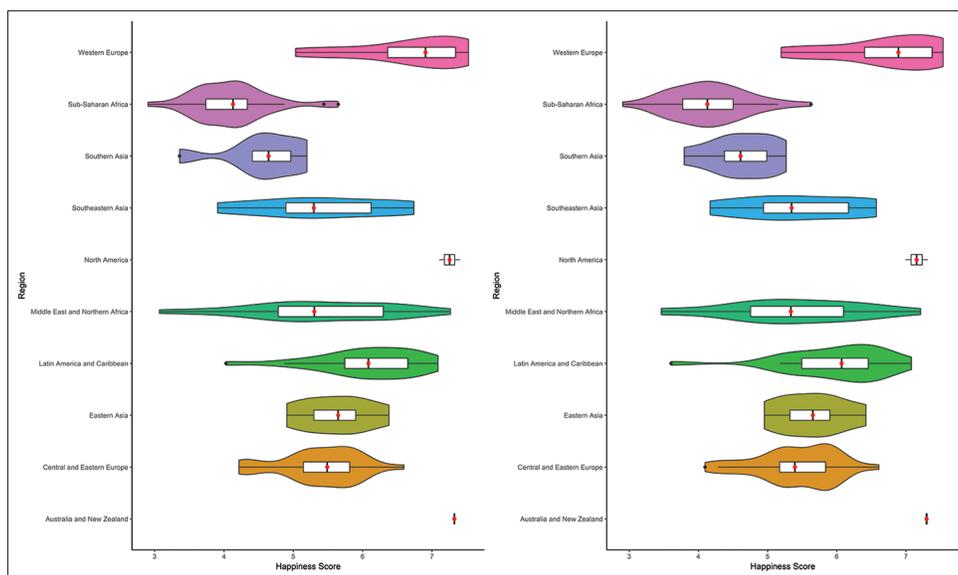
A significant point to note is that the lowest range of happiness scores is for sub-Saharan Africa, which is pulled upward by a few countries. Moreover, there is a wide variation between MENA and SEA regions where few countries have scored high on happiness scores. The median score for SA and SSA regions was less than five and even worse than MENA. The score for the MENA region is pulled downward by a few ill-performing countries on the measured covariates. Although the median score for EA and SA is above and below five, respectively. However, intra-regional variability was low.

Figure 3 displays a matrix of the correlation plot. Correlation plots gave a clear understanding of the magnitude of the linear relationship between variables. The statistical non-significance of correlation coefficients among covariates and happiness

**Table 1: Mean score distribution of happiness and its covariates across different regions of the world.**

Factors→ Regions↓	Happiness Score Mean (SD)	Life Expectancy Mean (SD)	Generosity Mean (SD)	Freedom Mean (SD)	Family Mean (SD)	Trust Mean (SD)	GDP Mean (SD)
ANZ (n=2)	7.30 (.02)	.83 (.02)	.49 (.02)	.61 (.01)	1.53 (.03)	.34 (.06)	1.45 (.06)
NA(n=2)	7.15 (.23)	.80 (.043)	.41 (.03)	.56 (.07)	1.45 (.04)	.21 (.11)	1.51 (.05)
EA(n=6)	5.65 (.52)	.81 (.14)	.22 (.13)	.41 (.10)	1.31 (.15)	.11 (.10)	1.32 (.21)
SA(n=7)	4.63 (.50)	.46 (.14)	.34 (.12)	.40 (.16)	.93 (.32)	.10 (.04)	.70 (.22)
SEA(n=8)	5.44 (.87)	.58 (.18)	.45 (.21)	.53 (.08)	1.25 (.13)	.13 (.15)	.97 (.41)
MENA(n=19)	5.37 (.99)	.61 (.11)	.20 (.13)	.36 (.14)	1.10 (.26)	.15 (.11)	1.17 (.34)
LAC(n=21)	5.96 (.77)	.62 (.11)	.21 (.10)	.44 (.13)	1.30 (.18)	.09 (.04)	1.01 (.22)
WE(n=21)	6.70 (.76)	.82 (.02)	.30 (.14)	.52 (.14)	1.44 (.12)	.22 (.13)	1.46 (.11)
CEE(n=29)	5.41 (.59)	.64 (.08)	.19 (.11)	.35 (.13)	1.28 (.23)	.08 (.08)	1.10 (.23)
SSA(n=34)	4.15 (.57)	.24 (.13)	.23 (.08)	.35 (.15)	.98 (.24)	.10 (.08)	.51 (.31)
World (n=149)	5.40 (1.11)	0.57 (.23)	0.25 (.13)	0.41 (.15)	1.20 (.27)	0.12 (.11)	1.00 (.41)

Where ANZ →Australia and New Zealand, NA→ North America, EA→ Eastern Asia, SA →Southern Asia, SEA →South-eastern Asia, MENA →Middle Eastern and Northern Africa, LAC →Latin America and Caribbean, WE→ Western Europe, CEE→ Central and Eastern Europe, SSA Sub-Saharan Africa, SD → Standard Deviation, GDP→ Gross Domestic Product



**Figure 2: Violin plots displaying the distribution of happiness score in the different regions of the World during the year 2016 and 2017**

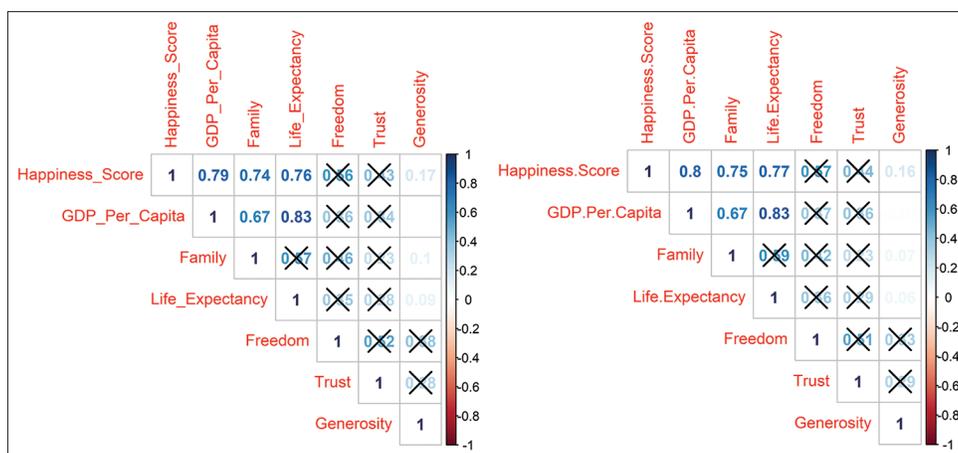


Figure 3: Correlation matrix displaying the relationship between happiness scores and its determinants for the year 2016 and 2017

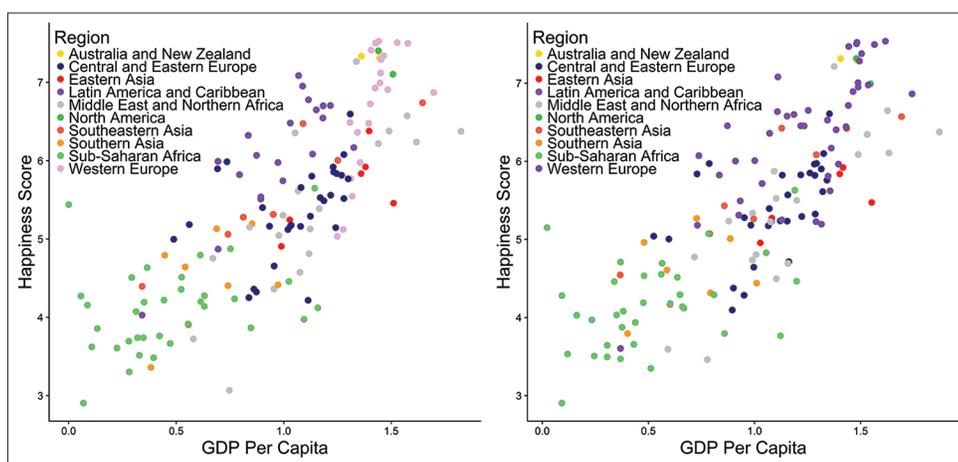


Figure 4: Scatter plot of happiness scores with GDP per capita in different regions of the world during the year 2016 and 2017

Table 2. Robust regression analysis of happiness scores and its determinants				
Variables	Estimates	Robust SE's	Bootstrap SE's	Bootstrap CI's
Intercept	1.62	0.18	0.18	1.30 - 2.0
Life Expectancy	1.27	0.31	0.35	0.61 - 1.98
GDP	0.77	0.19	0.19	0.41 - 1.12
Family	1.26	0.20	0.17	0.92 - 1.57
Freedom	1.63	0.32	0.32	0.95 - 2.22
Trust	0.91	0.45	0.57	-0.27 - 1.94

SE→ standard error; CI→ confidence interval

is depicted with a cross. These correlation plots helped us to identify the predictors for regression analysis. The high degree and statistically significant correlation between happiness and GDP, family and life expectancy were obtained. The approximate value of the correlation coefficient for these values aggregated around 0.75. Although, GDP, family and life expectancy qualified to be included in the regression model still all the covariates were included in the initial model in the absence of well-developed theory. The scatter plots for life expectancy and GDP are displayed in Figures 4 and 5, respectively. The scatter plot for family showed a trend like life expectancy and GDP. GDP and

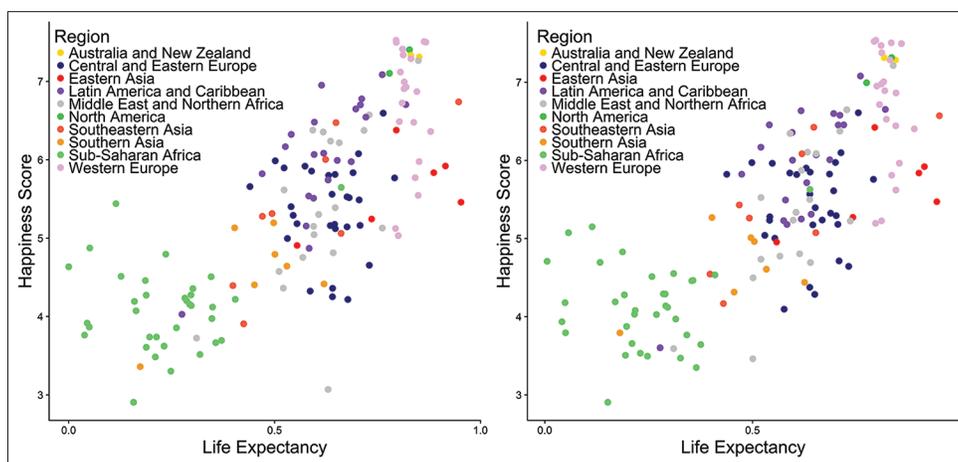
life expectancy revealed a linear pattern with happiness. The colour coding for different regions in the scatter plots highlights the relative position of each region. GDP and life expectancy are not the only factors which influence happiness score as countries having a low score on these have scored higher happiness score and vice versa.

The trust variable does not have a significant relationship with happiness. Model assumptions are essential requisite for building a model,<sup>[21]</sup> and the same were assessed before and after fitting a model. Table 2 presents estimates of robust regression estimation technique for departure from required assumptions.<sup>[22]</sup>

## Discussion

### Happiness is inherently complex

Happiness has been considered an elusive and evanescent state. The quest for joy would have been started with the origin of life, as all human beings strive to be happy and content. However, its importance in health and policymaking has received increased thrust recently. The World Happiness Report utilised GDP, social



**Figure 5:** Scatter plots of happiness scores with life expectancy in different regions of the world during the year 2016 and 2017

support, healthy life expectancy, freedom to make life choices, generosity (donations) and perceptions of corruption to rank happiness across countries.

### GDP and happiness

The present analysis indicates that the GDP (overall economic output) is directly related to happiness. However, the GDP of the country is not a definitive measure of well-being.<sup>[23]</sup> WHR is dominated by Nordic countries which indicates shared features of the policy, geography and culture.<sup>[24]</sup> The doctrine of collecting high taxes in these countries help to generate relatively equal societies. Social mobility and income security in Nordic countries are also much higher.<sup>[25,26]</sup> Meanwhile, many countries that are either war-torn or close to being destitute are at the bottom of the list. In the case of Burundi (last in the list), both situations prevail. The stark differences between countries at both ends of the scale remind that GDP is essential but not be-all and end-all of quality of life. Therefore, there is continuous growth in research on improving overall human well-being.

### Family and happiness

Close relationships are the most important relationships. Social ties are crucial in all phases of life, from birth through to senescence. The scientific evidence suggests that social connections positively impact happiness and mental functioning.<sup>[27]</sup> It also affects the number of health outcomes and is a positive predictor of longevity.<sup>[28]</sup> Family and friends play a significant role in recovery from mental illnesses.<sup>[29,30]</sup> A study by Gerritsen and Colleagues have nicely articulated the various advantages of involving family members of the patients in the intensive care unit (ICU).<sup>[31]</sup> Moreover, Rosland and colleagues in their systematic review studied the role of family behaviour on chronic illness outcomes.<sup>[32]</sup> Therefore, it is vital to involve the family members of patients for building trust and speedy recovery of the patient.

### Life expectancy and happiness

Happiness is directly related to life expectancy. Yoichi and

colleagues inspected the association between positive well-being and longevity in both healthy and morbid people (heart or kidney disease).<sup>[33]</sup> Further, they found that higher positive well-being had a favourable effect on survival. It reduced the risk of death by 18% in healthy people as compared to 2% in medically morbid people. Mishra has discussed the role of many medical interventions in improving the life expectancy of people.<sup>[34]</sup> How longevity is positively affected by happiness is unknown. However, the adaptation of a healthy lifestyle (including a healthy diet, exercise and no smoking) prolongs survival.<sup>[35]</sup>

### Generosity and happiness

Charity is not necessarily a natural choice, as any selfless act comes at a personal cost. Park *et al.* investigated the neural ‘map’ of the correspondence between generous actions and increased levels of happiness. They found that people who behaved generously were happier afterward than those who behaved more selfishly.<sup>[36]</sup>

### Community freedom and happiness

Community freedom linearly varies with happiness. Dr Kathleen Hall, an author of the book, ‘A Life in Balance: Nourishing the Four Roots of True Happiness’, describes true happiness as the ultimate feeling of freedom.<sup>[37]</sup> It emphasises on individual experiences from the freedom of choice when he/she lives from inside out. Thus, happiness is a creation in itself as compared to traditional yardsticks. Listening to inner voice and belief in one’s own choices will lead to a happy life.

### Trust and happiness

Humans are gregarious by nature and trust is a fundamental entity in any social setting. For sustainable success, trust needs to be matched by trustworthiness. However, unfortunately, the current study shows no role of confidence in the happiness of people. Trust, knowledge, regard and loyalty are the four pillars of doctor and patient’s relationship.<sup>[38]</sup> Axelrod and colleagues highlighted the importance of maintaining trust in the wake of the increasing use of technology in healthcare.<sup>[39]</sup>

Happiness can and does change, according to the quality of the society in which people live. Mental and physical health are two integral components of joy. The medical interventions play a considerable role in improving the life expectancy of the people. Further, trust and recovery of people can be enhanced by involving the family in decision making. Happiness is an admixture of subjective as well as objective thoughts, experiences and deeds. There is no direct evidence of how trust and family supplement medical interventions to affect happiness. Still, indirect evidence suggests that these are important in the recovery of patients. Therefore, researchers should incorporate these into practice to improve the experiences of patients.

## Conclusion

The values and norms in society are changing at a fast pace. Therefore, the measures of happiness require consistent and innovative approaches to measure it. The traditional socioeconomic covariates: GDP per capita, family, life expectancy, freedom, generosity and trust were used to describe the extent to which these factors contribute to evaluating the happiness in each country. However, these may not represent the complete set. More hybrid studies are required to investigate the intricate relationship between happiness and its covariates.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

## Ethical statement

The anonymised dataset was available in public domain under license CC0 to be used for analysis and dissemination of same. Therefore, ethical approval was not required.

## Informed consent

The deidentified data was available under license CC0 for public usage. Therefore, Informed consent was not obtained.

## References

- Banth S, Talwar C. Anasakti, the Hindu ideal, and its relationship to well-being and orientations to happiness. *J Relig Health* 2012;51:934-46.
- Seligman MEP. *Flourish: A Visionary New Understanding of Happiness and Well-Being*. Danvers, MA: Simon and Schuster; 2012.
- Watson D, Clark LA, Tellegen A. Development and validation of brief measures of positive and negative affect: The PANAS scales. *J Pers Soc Psychol* 1988;54:1063-70.
- Lyubomirsky S, Lepper HS. A measure of subjective happiness: Preliminary reliability and construct validation. *Soc Indic Res* 1999;46:137-55.
- Hills P, Argyle M. The Oxford Happiness Questionnaire: A compact scale for the measurement of psychological well-being. *Pers Individ Dif* 2002;33:1073-82.
- Helliwell J, Layard R, Sachs J. *World Happiness Report 2015* [Internet]. 2015. Available from: <http://eprints.lse.ac.uk/47487/>.
- Government of Dubai. *Dubai Plan 2021* [Internet]. [cited 2018 Jan 09]. Available from: <https://www.dubaiplan2021.ae/dubai-plan-2018/>.
- (OECD) O for EC and D. *OECD Guidelines on Measuring Subjective Well-Being*. OECD Publishing Paris; OECD 2013.
- Step toe A. Investing in happiness: The gerontological perspective. *Gerontology* 2019;65:634-9.
- Fisher JJ, Kaitelidou D, Samoutis G. Happiness and physical activity levels of first year medical students studying in Cyprus: A cross-sectional survey. *BMC Med Educ* 2019;19:1-7.
- Step toe A. Happiness and health. *Annu Rev Public Health* 2019;40:339-59.
- See KF, Yen SH. Does happiness matter to health system efficiency? A performance analysis. *Health Econ Rev* 2018;8:33.
- Gallup. *Methodology* [Internet]. 2018 [cited 2018 Jul 17]. Available from: <https://www.gallup.com/178667/gallup-world-poll-work.aspx>.
- Gallup. *Worldwide Reserach Methodology and Codebook*. 2017.
- Kaggle. *Sustainable Development Solutions Network* [Internet]. 2018. Available from: <https://www.kaggle.com/aigerim01/analys-for-world-hapiness-report/data>.
- Helliwell J, Layard R, Sachs J. *World Happiness Report 2013*. 2013.
- Fox J. *An R and S-Plus companion to applied regression*. SAGE Publications, Incorporated; 2002.
- Davison AC, Hinkley D V. *Bootstrap Methods and their Application*. Cambridge: Cambridge University Press; 1987.
- Efron B. Bootstrap methods: Another look at the jackknife. *Ann Stat* 1979;7:1-26.
- Efron B, Tibshirani RJ. *An Introduction to the Bootstrap*. CRC Press: Danvers, MA; 1994.
- Field A. *Discovering Statistics using SPSS*. Sage Publications: Mathura Road, New Delhi; 2009.
- Wilcox RR. *Introduction to Robust Estimation and Testing*. San Diego, CA: Acad Press; 2005.
- Brinkman RL, Brinkman JE. GDP as a measure of progress and human development: A process of conceptual evolution. *J Econ Issues* 2011;45:447-56.
- Ye D, Ng Y-K, Lian Y. Culture and happiness. *Soc Indic Res* 2015;123:519-47.
- Bukodi E, Goldthorpe JH. *Social Inequality and Social Mobility: Is there an Inverse Relation?* 2018.
- Landersø R, Heckman JJ. The scandinavian fantasy: The sources of intergenerational mobility in denmark and the us. *Scand J Econ* 2017;119:178-230.
- Cacioppo JT, Hughes ME, Waite LJ, Hawkley LC, Thisted RA. Loneliness as a specific risk factor for depressive symptoms: Cross-sectional and longitudinal analyses. *Psychol Aging* 2006;21:140-51.
- Berkman LF, Syme SL. Social networks, host resistance, and mortality: A nine-year follow-up study of Alameda County residents. *Am J Epidemiol* 1979;109:186-204.
- Ward B, Reupert A, McCormick F, Waller S, Kidd S. Family-focused

- practice within a recovery framework: Practitioners' qualitative perspectives. *BMC Health Serv Res* 2017;17:234.
30. Waller S, Reupert A, Ward B, McCormick F, Kidd S. Family-focused recovery: Perspectives from individuals with a mental illness. *Int J Ment Health Nurs* 2019;28:247-55.
  31. Gerritsen RT, Hartog CS, Curtis JR. New developments in the provision of family-centered care in the intensive care unit. *Intensive Care Med* 2017;43:550-3.
  32. Rosland AM, Heisler M, Piette JD. The impact of family behaviors and communication patterns on chronic illness outcomes: A systematic review. *J Behav Med* 2012;35:221-39.
  33. Chida Y, Steptoe A. Positive psychological well-being and mortality: A quantitative review of prospective observational studies. *Psychosom Med* 2008;70:741-56.
  34. Mishra S. Does modern medicine increase life-expectancy: Quest for the Moon Rabbit? *Indian Heart J* 2016;68:19-27.
  35. Strine TW, Chapman DP, Balluz LS, Moriarty DG, Mokdad AH. The associations between life satisfaction and health-related quality of life, chronic illness, and health behaviors among US community-dwelling adults. *J Community Health* 2008;33:40-50.
  36. Park SQ, Kahnt T, Dogan A, Strang S, Fehr E, Tobler PN. A neural link between generosity and happiness. *Nat Commun* 2017;8:159-64.
  37. Hall K. *A Life in Balance: Nourishing the Four Roots of True Happiness*. New Delhi: Amacom Books; 2006.
  38. Chipidza FE, Wallwork RS, Stern TA. Impact of the Doctor-Patient Relationship. *Prim Care Companion CNS Disord* 2015;17. doi: 10.4088/PCC.15f01840.
  39. Axelrod DA, Goold SD. Maintaining trust in the surgeon-patient relationship: Challenges for the new millennium. *Arch Surg* 2000;135:55-61.